

Response to Office Action
dated April 8, 2003

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REMARKS

This is in response to the Final Office Action dated April 8, 2003. Reconsideration is respectfully requested.

Status of Claims

Claims 1-4, 14-20 and 24-30 are pending in the application. Applicant has added new Claim 30. Support for Claim 30 may be found in the application on page 12, lines 29-32. No new matter has been added. Claim 1 has been amended by incorporating into it the recitations of Claim 18. Claim 18 has been canceled along with Claims 27-29, these claims being made redundant by the amendment to Claim 1. The dependency of Claim 19 has been amended from Claim 18 to Claim 1, Claim 18 having been canceled.

Claims 5-13 were canceled in a Second Preliminary Amendment dated April 26, 2001, and Claims 21-23 have been canceled in response to the Examiner having made the restriction requirement final.

Acknowledgment of Interview

Applicant acknowledges, with gratitude, the interview by telephone granted by the Examiner with the undersigned on July 3, 2003 during which proposed amendments to Claim 1 were discussed, the Examiner indicating that new Claim 30 would not be entered if presented in a response to the Action since this Action has been made final by the Examiner.

Request for Continued Examination

Applicant files this submission comprising amendments to the claims and arguments against the rejections in conjunction with a Request for Continued Examination pursuant to 37 CFR 1.114. A check in the amount of \$375 is enclosed herewith to cover the fee pursuant to 37 CFR 1.17(e).

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Summary of the Rejections

Claims 16 and 24-29 are rejected under 35 USC 112 as indefinite due to the use of the term "different", the Examiner contending that this term is "vague and indefinite".

Claims 1-18 and 24-29 are rejected as obvious over U.S. Patent No. 4,287,245 to Kikuchi, either alone or in view of UK Patent Application GB 2 296 749.

Applicant respectfully traverses the rejections and presents arguments below which demonstrate, on a claim-by-claim basis, that the claims as amended are allowable over the cited references.

Summary of the Invention

Applicant's invention concerns a pre-formed insulation module suitable for a broad range of insulating applications and especially useful for insulating process components such as pipes and fittings in cryogenic industrial settings. The pre-formed insulation module according to the invention has opposed longitudinally extending contact surfaces and terminal contact surfaces and comprises at least one inner insulation layer having thermal shock characteristics, at least one outer insulation layer disposed radially outwardly from the inner layer, at least one water vapor barrier and a cladding layer. The longitudinally extending contact surfaces include a portion formed by a portion of at least one of the first and second insulation layers. Each module incorporates at least one contraction/expansion joint designed and arranged to accommodate expansion/contraction along the portion of the pipe insulated with the module. When a plurality of contraction/expansion joints are present, each one is staggered in longitudinal and circumferential location relative to another such joint.

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The Argument

Applicant provides below, on a claim-by-claim basis, arguments against the rejections of the pending claims under 35 USC 103.

Claim 1

Claim 1 has been amended to recite the insulation module having at least at least one contraction/expansion joint formed along the length of the module. This was previously the subject matter recited in Claims 18 and 27-29, now canceled. Claim 18 was previously rejected as obvious, the Examiner maintaining that positioning contraction/expansion joints intermittently along the length of a module, for example, using a gap or recess, to accommodate contraction/expansion is old and well known. Applicant respectfully disagrees with the Examiner and contends that it would not be obvious to position a gap, recess or any other type of contraction/expansion joint along an insulating module as recited in Claim 1 because the module is intended to provide continuous covering of the item being insulated so that the water vapor barrier layer, recited in Claim 1, is effective at preventing water ingress. Under cryogenic conditions which such modules are expected to see is advantageous to prevent water ingress and avoid the formation of ice which may disrupt the insulation module as it forms and accumulates if water vapor is permitted to contact the insulated item. Thus, it would not be obvious to one of ordinary skill in the art to position a contraction/expansion joint along the length of the insulation module as taught by the applicant. This point is further bolstered by the cited reference Kikuchi, which, as tacitly admitted by the Examiner, does not teach or suggest any form of contraction/expansion joint. Kikuchi in fact, teaches away from the use of contraction/expansion joints, especially gaps or recesses, for

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providing relief for expansion or contraction as shown at column 8, lines 19-24:

As the heat-insulating element is greater in shrinking ratio than the metal pipe at an extremely low temperature, the conventional heat insulator system has such a drawback that cracks or voids are apt to be formed in the joint portions of the insulator units, giving a serious adverse influence on the performance of the system.

Kikuchi teaches using insulating material with "a good compression stability compressively packed" so as to "absorb stress caused by the shrinkage" of the insulated item at low temperatures and "prevent[ing] the occurrence of cracks or breakages in the joint portions" of the insulation (see column 8, lines 30-39). This is the opposite of a contraction/expansion joint, which does not "absorb stress" but allows expansion and contraction in a stress free state.

To establish a *prima facie* case of obviousness three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference or references when combined, must teach or suggest all the claim limitations. (MPEP, Section 2143, page 2100-122.)

Clearly where there is a teaching away, there can be no motivation to modify the reference in contradiction to the reference teachings. Kikuchi does not teach the use of a

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contraction/expansion joint, and further teaches that gaps or voids in response to shrinkage due to low temperature effects are to be prevented so as to avoid adverse system performance. It is thus unreasonable to posit, as has the Examiner, that it would be obvious to modify Kikuchi by introducing contraction/expansion joints along the length of the module, especially in the form of gaps or recesses, when Kikuchi teaches absorbing the stresses caused by the contraction/expansion of one component relative to another and teaches away from gaps or voids which would otherwise relieve the stress due to expansion or contraction.

Applicant respectfully contends that, there being no motivation for the proposed modification of Kikuchi, the requirements in support of a prima facie case of obviousness have not been met, and Claim 1 should be allowed over Kikuchi.

Claims 2-4, 14-20 and 24-26 are dependent, either directly or indirectly, upon Claim 1 and should be allowable for the same reasons as Claim 1 is allowable over the cited reference.

Claim 19

Claim 19 should be allowable over Kikuchi as it recites an insulation module wherein the contraction/expansion joint is a recess with a terminal end formed in at least one of the outer insulation layers. An example of such a joint is shown by reference character 370 in Figure 3, with the terminal end indicated at 371. The joint is described in the application at page 10, lines 11-15. The joint as recited in Claim 19 is nowhere taught or suggested in Kikuchi and clearly does not comprise a simple gap as characterized by the Examiner in his rejection of Claim 19. The joint recited in Claim 19 will permit relative expansion and yet prevent water vapor ingress in light of its design, as having a terminal end in the

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insulation. This is not taught or suggested, nor is there any motivation to modify Kikuchi to include such a joint. Kikuchi does not meet the requirements necessary to establish a rejection of Claim 19 on the basis of obviousness and this claim should thus be allowable over Kikuchi.

Claim 30

Claim 30 recites an insulation module having a plurality of contraction/expansion joints formed along the length of the module, where the contraction/expansion joints are staggered in longitudinal and circumferential locations relative to one another. The reason for this configuration of the contraction/expansion joints is to secure jointing and minimize risk of water vapor ingress as stated in the application on page 12, lines 31 and 32. None of the cited references teaches or even suggests such an arrangement of contraction/expansion joints and there is no evidence apparent from any of the cited references which would suggest that it would be obvious to arrange the joints in such a manner as recited in Claim 30. Applicant contends that Claim 30 is allowable over the cited prior art as it is both novel and non-obvious in view of these references.

Claim Rejections Under 35 USC 112

Claims 16 and 24-26 are rejected under 35 USC 112 as indefinite, the Examiner stating that the term "different" recited in these claims is "vague and indefinite", that, on a microscopic level, all elements would be different, and that the scope of the difference is required. Applicant respectfully disagrees with the rejection of these claims as well as the Examiner's characterization of "different" as vague and indefinite.

Applicant asserts that "different" is an acceptable term in U.S. patent practice recited in patent claims to

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distinguish characteristics of various claim elements.

Applicant has in fact found the term "different" used in the claims of three issued patents: U.S. Patent Nos. 4,387,045; 4,431,336; and 4,395,414. Applicant invites the Examiner to review the claims of these patents which provide an example that the term "different" is acceptable in U.S. practice and is not per se considered vague and indefinite.

Applicant respectfully asserts that the Examiner's remarks concerning the "microscopic level" are irrelevant to the claims at issue. We are not dealing with microscopic properties but with macroscopic characteristics of an insulation layer. Furthermore, and contrary to the Examiner's remarks, the scope of the difference between the first and second insulation materials is expressly recited in the claims. The claims do not merely recite that the insulation layers are different, they recite that the layers have different thermal shock characteristics, clearly defining the scope of the difference.

Applicant respectfully requests that the rejections of Claims 16 and 24-26 as indefinite be withdrawn in view of the arguments presented.

Summary

Applicant has shown that the cited reference, Kikuchi, fails to meet the requirements necessary to establish a *prima facie* case of obviousness in support of the rejections of either independent Claim 1 as amended or Claim 30, as well as dependent Claim 19. Applicant respectfully contends that these claims should be allowable over the cited references in view of the arguments presented. The remaining dependent claims should also be allowable for the same reasons that the independent claims on which they depend are allowable.

Applicant has further shown that the rejection of Claims 16

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and 24-26 under 35 USC 112 runs contrary to U.S. practice and is not supported by the reasoning stated in the Action. Applicant contends that the application is in condition for allowance and respectfully requests a favorable decision in view of the arguments and amendments set forth in this reply.

Respectfully submitted,

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Enclosures